

### First sludge from K Basins treated at T Plant

On Oct. 26, workers with the Waste Stabilization & Disposition (WS&D) Project at T Plant began treating the first radioactive sludge retrieved from a pool at the K Basins.

The sludge was removed from a section of Hanford's K East Basin, one of two water-filled pools located about 400 yards from the Columbia River. The million-gallon basin once contained hundreds of tons of spent nuclear fuel that had corroded during decades of storage, resulting in approximately 42 cubic meters of sludge covering the floor of the basin. Sludge is made up of fragments of concrete from the basin walls, sand blown in from the desert, and fuel corrosion products.

Approximately four cubic meters of sludge were retrieved from an offshoot of the basin, the North Load Out Pit. During Hanford's plutonium-production era, the North Load Out Pit was used to load fuel irradiated in the K East Reactor into railroad cars for the trip to processing facilities on Hanford's Central Plateau. Most recently, the pit was used to hold "backwashed" sand from the basin's water-filtration system. The sludge from this area is less radioactive than the sludge in the rest of the basin and was identified for earlier treatment. After the sludge was pumped into large containers, Fluor Hanford crews transported the containers to Hanford's T Plant canyon, where specialized equipment will be used to process the material.

T Plant was Hanford's original canyon facility and processed the plutonium from B Reactor used to end World War II. Continuing its service some 60-years later, T Plant is a

key facility on the Hanford Site and the oldest nuclear facility in the world still operating with a nuclear mission.

"Getting to this point in the project is significant," said Keith A. Klein, manager of the Department of Energy's Richland Operations Office (RL). "This is a small portion of the K Basins sludge by volume, but working with the material will teach us a lot about safely treating the balance of it."

Over the next several months, workers will be measuring and mixing the sludge with grout in 55-gallon drums. The grout, a cement-like material, is used to solidify and encapsulate the sludge for permanent disposal.

"The key to starting this important project has been the involvement of the work force from the very beginning," said Dale McKenney, Fluor Hanford's vice president of WS&D. "The workers who will operate the system had direct input on the

design and layout of the equipment. They visited the fabrication shop and offered improvements to the engineering team. They also practiced on the equipment with non-radioactive, non-hazardous substitutes for the sludge to gain hands-on experience in a clean environment."

The process will result in up to 300 drums of treated waste, which will be temporarily stored at T Plant while they are evaluated for disposal at an onsite or offsite facility. The disposal pathway will be based on the characteristics of the treated waste and the acceptance criteria for the selected disposal facility.

RL News Release



After extensive training and a successful ORR, workers at T Plant began treating sludge last week. See related story on page 2.

### Extensive planning, training pays off

"Our extensive dry-runs, mock-ups, and factory testing have paid off through the facility's flawless conduct of operations," said Bob Wilkinson, T Plant facility manager. T Plant, part of the Waste Stabilization & Disposition organization, is now receiving sludge from the K Basins and treating it to prepare it for disposal. "As with the start-up of any new operation," Wilkinson said, "T Plant has started out very conservatively with the actual waste form and is just reaching full scale operations. By using this conservative approach, we have been able to demonstrate our process for calculating the waste loading is as expected, based on dose rates. The overall approach to dose loading has allowed us the ability to maximize our sludge loading in each drum, while still maintaining contact-handled limits on the outside of the final grouted container. We developed the dose-loading approach in partnership with the Pacific Northwest National Laboratory."

Wilkinson said four drums were processed over the first two days of grouting operations, accounting for 10 percent of the contents of the first Large Diameter Container (LDC) being grouted by maximizing waste-loading per drum. T Plant has a total of four stored LDCs containing sludge from the KE Basin's North Load Out Pit.

"During the ramp-up period, we identified several efficiencies that can be gained. With some fine-tuning, we should be able to have a more efficient and repeatable operation."

"Overall, our work team has and continues to be extremely sharp and knowledgeable in their approach to producing grouted sludge containers," Wilkinson said.